Amendments to the Claim:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

Claims 1-226 (cancelled)

227. (Currently Amended) A system for in vitro producing a mammalian pre-embryo, said system comprising

- means for obtaining a mammalian oocyte, and
- means for obtaining a mammalian spermatozoa, and
- an apparatus having at least two separate air-tight chambers, for which the oxygen tension of one chamber may be changed independent of the oxygen tension of the other chamber, said at least two separate air-tight chambers constitute a main chamber and at least one residence chamber, where said at least one residence chamber are smaller than said main chamber, and are located inside the main chamber and/or are attached to the main chamber, said apparatus comprising at least one entrance port capable of communicating with the means for obtaining the mammalian oocyte and/or the mammalian spermatozoa, and
- an ~~exit port~~ airlock for withdrawal of the pre-embryo and for transport of culturing means to and from said main chamber, as well as
- a communication port between said ~~at least two chambers~~ main chamber and each of said at least one residence chamber allowing transfer of oocyte, spermatozoa and/or pre-embryo between ~~the chambers~~ said main chamber and said at least one residence chamber.

228. (Previously Presented) The system according to claim 227, wherein the means for obtaining a mammalian oocyte is a system with a needle communicating under airtight conditions with a means for transferring from needle to said apparatus, such

means for transferring comprises syringe and tube.

229. (Previously Presented) The system according to claim 227, wherein the means for obtaining a mammalian spermatozoa is a system in which the oxygen tension can be controlled.

230. (Previously Presented) The system according to claim 227, wherein the temperature of each chamber can be regulated independently.

231. (Currently Amended) The system according to claim 227, wherein the oxygen tension of each ~~other~~ chamber is regulated independently by adding oxygen, nitrogen, carbon dioxide, helium or another inert gas, or a mixture of two or more of these gasses simultaneously with removing gas from the chambers, in the way that the pressure of the air is in accordance with the atmosphere.

232. (Previously Presented) The system according to claim 227, wherein the humidity of each chamber can be controlled and regulated to a level between 50 and 100%.

233. (Previously Presented) The system according to claim 232, wherein said entrance port and said exit port are combined to an air lock and the atmosphere of said air lock can be controlled and adjusted in respect of the contents of oxygen, nitrogen, carbon dioxide, helium or another inert gas, and in respect of the temperature and humidity.

234. (Previously Presented) The system according to claim 227, wherein a microscope can be placed and used when handling the oocytes, spermatozoa and embryos.

235. (Previously Presented) The system according to claim 227, wherein a working area is obtained within said main chamber, said working area comprises a place for culturing means containing the cultured cell structures, where the cultured cell structures is observed in the microscope, and said working area comprises room for handling means.

236. (Previously Presented) The system according to claim 235, wherein a micro-insemination apparatus is placed within the main chamber.

237. (Previously Presented) The system according to claim 227, wherein the main chamber comprises opening means permitting entrance to human to handle the cell culture or the equipment inside the chambers.

238. (Previously Presented) The system according to claim 237, wherein to the opening means is attached sticks, bars or instruments manipulated by fibre optics, by which the cell culture or the equipment can be handled.

239. (Currently Amended) The system according to claim 227, wherein the main chamber has at least one small part of its surface replaced with a membrane, said membrane is sterile and has a structure through which a needle can be ~~struck~~ stuck through, when the needle is removed said membrane fills up the area where the needle was stuck ~~was~~ through, and no gasses or particles can diffuse through the membrane either when a needle is stuck through the membrane or no needle is stuck through the membrane.

240. (Previously Presented) The system according to claim 239, wherein said residence chambers constitute boxes for culture containers containing cell cultures of oocyte, spermatozoa, embryo, and stem cells including stem cell lines.

241. (Previously Presented) The system according to claim 227, wherein the oxygen tension and pressure of each chamber or air-tight boxes can be regulated by a computer by retrieving an image of the embryo in said chamber or said air-tight boxes.

242. (Currently Amended) ~~Use~~ A method for culturing a cell culture which comprises culturing cells in at least one chamber of the system according to claim 227 ~~for culturing cell structures~~ , while regulating the oxygen tension of the main chamber, the at least one residence chamber and/or the airlock to control the development of the cells in said cell culture.

243. (Currently Amended) ~~Use of the system according to claim 227 for~~ A method for culturing gametes, embryos, blastocysts, stem cell and/or cells, belonging to stem cell line~~s~~ which comprises culturing gametes, embryos, blastocysts, stem

cells, and/or cells belonging to a stem cell line in at least one chamber of the system of claim 227, while regulating the oxygen tension of said chamber to control the development of said culturing gametes, embryos, blastocysts, stem cell and/or cells belonging to a stem cell line.

244 (New). The method of claim 243 which comprises

- obtaining at least one mammalian oocyte by utilising means for obtaining a mammalian oocyte, and
- obtaining mammalian spermatozoa by utilising means for obtaining a mammalian spermatozoa, and
- culturing said at least one mammalian oocyte and said mammalian spermatozoa,
- in vitro fertilising said at least one mammalian oocyte with said mammalian spermatozoa,
- culturing said embryos, blastocysts, stem cells and/or stem cell lines.